IN THE CLAIMS

1. (Currently amended) A multi-output DC-DC converter comprising:

an inductor ~~(L)~~,

a main switch ~~(S0)~~ for periodically coupling a DC-input voltage ~~(Vin)~~ to the inductor ~~(L)~~,

a ~~multitude~~plurality of output switches ~~(S1, S2, S3)~~ coupled to the inductor ~~(L)~~, each one for generating an associated one of a ~~multitude~~plurality of output voltages ~~(V1, V2, V3)~~ to an associated one of a ~~multitude~~plurality of loads ~~(L1, L2, L3)~~, and

a controller ~~(1)~~ for controlling the main switch ~~(S0)~~ and the output switches ~~(S1, S2, S3)~~ in a sequence ~~(SE)~~ of cycles ~~(CY1, CY2, CY3)~~, each one of the cycles ~~(CY1, CY2, CY3)~~ comprising an on-phase ~~(TO1, TO2, TO3)~~ of the main switch ~~(S0)~~ followed by an on-phase ~~(T1, T2, T3)~~ of one of the ~~multitude~~plurality of the output switches ~~(S1, S2, S3)~~, the controller ~~(1)~~ comprising:

a ~~multitude~~plurality of comparators ~~(10, 11, 12)~~ each one for comparing an associated one of the ~~multitude~~plurality of output voltages ~~(V1, V2, V3)~~ with an associated one of a ~~multitude~~plurality of reference voltages ~~(VR1, VR2, VR3)~~,

means for determining ~~(13)~~ whether a number of the output voltages ~~(V1, V2, V3)~~ which have a value above their associated reference voltage ~~(VR1, VR2, VR3)~~ is larger than, smaller than, or equal to a number of the ~~multitude~~plurality of output voltages ~~(V1, V2, V3)~~ which have a value below their associated reference voltage ~~(VR1, VR2, VR3)~~,

means for generating ~~(14)~~ the cycles ~~(CY1, CY2, CY3)~~ either with a first duty cycle ~~(D1)~~ or a second duty cycle ~~(D2)~~ being larger than the first duty cycle ~~(D1)~~ to

obtain a first number ~~(N1)~~ of cycles ~~(CY1, CY2, CY3)~~ with the first duty cycle ~~(D1)~~ and a second number ~~(N2)~~ of cycles ~~(CY1, CY2, CY3)~~ with the second duty cycle ~~(D2)~~, the first number ~~(N1)~~ being: (1) larger than the second number if the number of the output voltages which have a value above their associated reference voltage is larger than the number of the plurality of output voltages which have a value below their associated reference voltage; ~~,~~ (2) smaller than the second number if the number of the output voltages which have a value above their associated reference voltage is smaller than the number of the plurality of output voltages which have a value below their associated reference voltage; ~~,~~ or (3) equal to the second number the second number if the number of the output voltages which have a value above their associated reference voltage is equal to the number of the plurality of output voltages which have a value below their associated reference voltage ~~(N2), respectively~~.

2. (Currently amended) A multi-output DC-DC converter as claimed in claim 1, wherein the first number ~~(N1)~~ is equal to the number of output voltages ~~(V1, V2, V3)~~ which have a value above their associated reference voltage ~~(VR1, VR2, VR3)~~, and wherein the second number ~~(N2)~~ is equal to the number of output voltages ~~(V1, V2, V3)~~ which have a value below their associated reference voltage ~~(VR1, VR2, VR3)~~.

3. (Currently amended) A multi-output DC-DC converter as claimed in claim 2, wherein the means for generating ~~(14)~~ the cycles comprises a sequencer ~~(140)~~ for controlling an order of the cycles ~~(CY1, CY2, CY3)~~ in a sequence ~~(SE)~~ wherein, as much as possible at the present values of the first number ~~(N1)~~ and the second number ~~(N2)~~, one of the cycles

~~(CY1, CY2, CY3)~~ with the second duty cycle ~~(D2)~~ precedes one of the cycles ~~(CY1, CY2, CY3)~~ with the first duty cycle ~~(D1)~~.

4. (Currently amended) A multi-output DC-DC converter as claimed in claim 2, wherein the means for generating ~~(14)~~ the cycles comprises a sequencer ~~(140)~~ for controlling an order of the cycles ~~(CY1, CY2, CY3)~~ in a sequence ~~(SE)~~ to first comprise all the cycles ~~(CY1, CY2, CY3)~~ with the second duty cycle ~~D2)~~ and then all the cycles ~~(CY1, CY2, CY3)~~ with the first duty cycle ~~(D1)~~.

5. (Currently amended) A multi-output DC-DC converter as claimed in claim 2, wherein the means for generating ~~(14)~~ the cycles comprises a means for allocating ~~(141)~~: the first number ~~(N1)~~ of the first duty cycles ~~(D1)~~ as much as possible to cycles ~~(CY1, CY2, CY3)~~ associated with output voltages ~~(V1, V2, V3)~~ that have a value below their corresponding reference voltage ~~(VR1, VR2, VR3)~~, and the second number ~~(N2)~~ of the second duty cycles ~~(D2)~~ as much as possible to cycles ~~(CY1, CY2, CY3)~~ associated with output voltages ~~(V1, V2, V3)~~ which have a value above their corresponding reference voltage ~~(VR1, VR2, VR3)~~.

6. (Currently amended) A multi-output DC-DC converter as claimed in claim 5, wherein the means for allocating ~~(141)~~ the number of duty cycles is adapted for further allocating the first duty cycle ~~(D1)~~ to cycles ~~(CY1, CY2, CY3)~~ associated with output voltages ~~(V1, V2, V3)~~ that have a value above their corresponding reference voltage ~~(VR1, VR2, VR3)~~ if the first number ~~(N1)~~ is larger than the number of output voltages ~~(V1, V2, V3)~~ that

have a value below their associated reference voltage ~~(VR1, VR2, VR3)~~.

7. (Currently amended) A multi-output DC-DC converter as claimed in claim 5, wherein the means for allocating ~~(141)~~ is adapted for further allocating the second duty cycle ~~(D2)~~ to cycles ~~(CY1, CY2, CY3)~~ associated with output voltages ~~(V1, V2, V3)~~ that have a value below their associated reference voltage ~~(VR1, VR2, VR3)~~ if the second number ~~(N2)~~ is larger than the number of output voltages ~~(V1, V2, V3)~~ that have a value above their associated reference voltage ~~(VR1, VR2, VR3)~~.

8. (Currently amended) A multi-output DC-DC converter as claimed in claim 5, wherein the means for allocating ~~(141)~~ is adapted for allocating to a predetermined one of the cycles ~~(CY1, CY2, CY3)~~ in a sequence ~~(SE)~~ wherein a lowest amount of energy is transferred to one of the output voltages ~~(V1, V2, V3)~~ of which the value is above the associated reference voltage ~~(VR1, VR2, VR3)~~.

9. (Currently amended) A multi-output DC-DC converter as claimed in claim 5, wherein the means for allocating ~~(141)~~ is adapted for allocating as a first one of the cycle ~~(CY1, CY2, CY3)~~ in a sequence ~~(SE)~~ an output voltage ~~(V1, V2, V3)~~ of which the value is above the associated reference voltage ~~(VR1, VR2, VR3)~~ and to which a first duty cycle ~~(D1)~~ is allocated.

10. (Currently amended) A multi-output DC-DC converter as claimed in claim 5, wherein the means for allocating ~~(141)~~ is adapted for allocating to a predetermined one of the

cycles ~~(CY1, CY2, CY3)~~ in a sequence ~~(SE)~~ wherein a highest amount of energy is transferred to one of the output voltages ~~(V1, V2, V3)~~ of which the value is below the associated reference voltage ~~(VR1, VR2, VR3)~~.

11. (Currently amended) A multi-output DC-DC converter as claimed in claim 5, wherein the means for allocating ~~(141)~~ is adapted for allocating, in a sequence ~~(SE)~~, a last cycle ~~(CY1)~~ to which a second duty cycle is allocated to an output voltage ~~(V1, V2, V3)~~ of which the value is below the associated reference voltage ~~(VR1, VR2, VR3)~~ and to which a second duty cycle ~~(D2)~~ is allocated.

12. (Currently amended) A multi-output DC-DC converter as claimed in claim 5, wherein the means for allocating ~~(141)~~ is adapted to allocate in a next sequence ~~(SE)~~ the second duty cycle ~~(12)~~ to a particular one of the output voltages ~~(V1, V2, V3)~~, if in a preceding sequence ~~(SE)~~ the first duty cycle ~~(D1)~~ is allocated to this particular one of the output voltages ~~(V1, V2, V3)~~ while the associated reference voltage ~~(VR1, VR2, VR3)~~ is lower.

13. (Currently amended) A multi-output DC-DC converter as claimed in claim 5, wherein the means for allocating ~~(141)~~ is adapted to allocate in a next sequence ~~(SE)~~ the first duty cycle ~~(D1)~~ to a particular one of the output voltages ~~(V1, V2, V3)~~, if in a preceding sequence ~~(SE)~~ the second duty cycle ~~(D2)~~ is allocated to this particular one of the output voltages ~~(V1, V2, V3)~~ while the associated reference voltage ~~(VR1, VR2, VR3)~~ is higher.

14. (Currently amended) A multi-output DC-DC converter as claimed in 1, the multi-

output DC-DC converter further comprising mode detectors ~~(15)~~, each one being associated with one of the multiple output voltages ~~(V1, V2, V3)~~ for keeping track of a mode of each one of a multiple outputs ~~(O1, O2, O3)~~, each mode detector having three states ~~(0, 1, 2)~~, a first state ~~(0)~~ indicating whether no load current is drawn from the associated output ~~(O1, O2, O3)~~, a second state ~~(1)~~ and a third state ~~(2)~~ wherein load current is drawn from the associated output ~~(O1, O2. O3)~~, if the associated output ~~(O1, O2, O3)~~ is in the first state ~~(0)~~ and the associated output voltage ~~(V1, V2, V3)~~ is smaller than its associated reference voltage ~~(VR1, VR2, VR3)~~ the third state ~~(2)~~ is entered, if the associated output ~~(O1, O2, O3)~~ is in the first state ~~(0)~~ and the associated output voltage ~~(V1. V2, V3)~~ is larger than its associated reference voltage ~~(VR1, VR2, VR3)~~ the first state ~~(0)~~ will be maintained, if the associated output ~~(O1, O2. O3)~~ is in the second state ~~(1)~~ and the associated output voltage ~~(V1. V2, V3)~~ is larger than its associated reference voltage ~~(VR1, VR2, VR3)~~ the first state ~~(0)~~ is entered, if the associated output ~~(O1, O2, O3)~~ is in the second state ~~(1)~~ and the associated output voltage ~~(V1, V2, V3)~~ is smaller than its associated reference voltage ~~(VR1, VR2, VR3)~~ the third state ~~(2)~~ is entered, if the associated output ~~(O1. O2, O3)~~ is in the third state ~~(2)~~ and the associated output voltage ~~(V1, V2, V3)~~ is smaller than its associated reference voltage ~~(VR1, VR2, VR3)~~ the third state ~~(2)~~ is maintained, if the associated output ~~(O1, O2, O3)~~ is in the third ~~(2)~~ state and the associated output voltage ~~(V1, V2, V3)~~ is larger than its associated reference voltage ~~(VR1, VR2, VR3)~~ the second state ~~(1)~~ is entered.

15. (Currently amended) A multi-output DC-DC converter as claimed in 14, the means ~~(14)~~ for generating the cycles further comprising a sequence controller ~~(142)~~ for

controlling a number of cycles ~~(CY)~~ required in a sequence ~~(SE)~~ such that cycles ~~(CY)~~ are generated only for outputs ~~(O1, O2, O3)~~ that are in the second state ~~(1)~~ or the third state ~~(2)~~.

16. (Currently amended) An apparatus comprising the multi-output DC-DC converter as claimed in claim 1.

17. (Currently amended) A method of controlling a multi-output DC-DC converter comprising: an inductor ~~(L)~~, a main switch ~~(S0)~~ for periodically coupling a DC-input voltage ~~(Vin)~~ to the inductor ~~(L)~~, a ~~multitude~~plurality of output switches ~~(S1, S2, S3)~~ coupled to the inductor ~~(L)~~, each one for supplying an associated one of a ~~multitude~~plurality of output voltages ~~(V1, V2, V3)~~ to an associated one of a ~~multitude~~plurality of loads ~~(L1, L2, L3)~~, the method comprising: controlling ~~(1)~~ the main switch ~~(S0)~~ and the output switches ~~(S1, S2, S3)~~ in a sequence ~~(SE)~~ of cycles ~~(CY1, CY2, CY3)~~, each one of the cycles ~~(CY1, CY2, CY3)~~ containing an on-phase ~~(TO1, TO2, TO3)~~ of the main switch ~~(S0)~~ followed by an on-phase ~~(T1, T2, T3)~~ of one of the ~~multitude~~plurality of the output switches ~~(S1, S2, S3)~~, the method of controlling ~~(1)~~ comprising:

_____comparing ~~(10, 11, 12)~~ a corresponding one of the ~~multitude~~plurality of output voltages ~~(V1, V2, V3)~~ with an associated one of a ~~multitude~~plurality of reference voltages ~~(VR1, VR2, VR3)~~,

_____determining ~~(13)~~ whether a number of the output voltages ~~(V1, V2, V3)~~ that have a value above their associated reference voltage ~~(VR1, VR2, VR3)~~, is larger than, smaller

than, or equal to a number of the ~~multitude~~plurality of output voltages ~~(V1, V2, V3)~~ that have a value below their associated reference voltage ~~(VR1, VR2, VR3)~~, and

~~means for~~ generating ~~(14)~~ the cycles ~~(CY1, CY2, CY3)~~ either only with a first duty cycle ~~(D1~~ or a second duty cycle ~~(D2)~~ being larger than the first duty cycle ~~(D1)~~ to obtain a first number ~~(N1)~~ of cycles ~~(CY1, CY2, CY3)~~ with the first duty cycle ~~(D1)~~ and a second number ~~(N2)~~ of cycles ~~(CY1, CY2, CY3)~~ with the second duty cycle ~~(D2)~~, the first number ~~(N1)~~ being: (1) larger than the second number if the number of the output voltages which have a value above their associated reference voltage is larger than the number of the plurality of output voltages which have a value below their associated reference voltage; (2) smaller than the second number if the number of the output voltages which have a value above their associated reference voltage is smaller than the number of the plurality of output voltages which have a value below their associated reference voltage; or (3) equal to the second number the second number if the number of the output voltages which have a value above their associated reference voltage is equal to the number of the plurality of output voltages which have a value below their associated reference voltage ~~larger than, smaller than, or equal to the second number (N2), respectively~~.